



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,813	08/10/2005	Werner Zimmerman	101619.55842US	4204

23911 7590 02/15/2007
CROWELL & MORING LLP
INTELLECTUAL PROPERTY GROUP
P.O. BOX 14300
WASHINGTON, DC 20044-4300

EXAMINER

DUNLAP, JONATHAN M

ART UNIT	PAPER NUMBER
----------	--------------

2855

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/523,813

Applicant(s)

ZIMMERMAN ET AL.

Examiner

Jonathan Dunlap

Art Unit

2809

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :February 4, 2005/November 9, 2006.

DETAILED ACTION

Receipt is acknowledged of the preliminary amendment filed February 4, 2005. The amendment to the specification, abstract and claims have been considered by the Examiner and placed on the record. **Claims 1-17** are pending in the application and an Office Action on the merits follows below.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the second element as recited in both **claim 11** and **claim 17** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claim 15** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As described in the last sentence of the claim, "the electromagnetic resonating circuit projects out over the first inductor," finds no reference

in the specification of this application so as to indicate that the Applicant had possession of this invention at the time of the application. The closest related subject matter is that the inductor, which it self is part of the resonating circuit, projects over the at least one other element.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-2 and 13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to **claims 1 and 13**, as written, Applicant is attempting to claim both a situation where a single impedance is present or a second impedance and/or a second inductor are also present. It is unclear, and not definite as to which inventions is the true invention of the Applicant. Furthermore, in the event that the second impedance and/or second inductor are not present, the invention would fail to particularly and distinctly point out the claimed invention due to the fact that option is provided for the second impedance and/or the second inductor in that the claim states " a first impedance **OR** a second impedance and/or a second inductor [**Emphasis Added**].

Accordingly, **claim 2**, would have no antecedent basis if there was no second impedance and/or second inductor present.

Claim Rejections - 35 USC § 112 & 101

5. The following is a quotation of the second paragraph of 35 U.S.C. 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. **Claims 13-17** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13-17, as written, will be rejected under 35 U.S.C. 112 and 35 U.S.C. 101 because a single claim, which claims both an apparatus and the method steps of using the apparatus, is indefinite under USC 112, second paragraph. This type of claim is indefinite because it fails to positively recite the boundaries of protection. The metes and bounds of the claim cannot be determined because it is unclear whether protection is sought for the method or for the apparatus.

MPEP 2173.05 (p) (II) States:

PRODUCT AND PROCESS IN THE SAME CLAIM

A single claim which claims both an apparatus and the method steps of using the apparatus is indefinite under 35 U.S.C. 112, second paragraph. * > IPXL Holdings v. Amazon.com, Inc., 430 F.2d 1377, 1384, 77 USPQ2d 1140, 1145 (Fed. Cir. 2005); < Ex parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990) * > (< claim directed to an automatic transmission workstand and the method * of using it * held ** ambiguous and properly rejected under 35 U.S.C. 112, second paragraph >) < .

Such claims * > may < also be rejected under 35 U.S.C. 101 based on the theory that the claim is directed to neither a "process" nor a "machine," but rather embraces or overlaps two different statutory classes of invention set forth in 35 U.S.C. 101 which is drafted so as to set forth the statutory classes of invention in the alternative only. Id. at 1551.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by **Buchwald (U.S. Patent 4,975,643)**.

According to **claim 1**, Buchwald discloses a stress/strain measuring sensor **28** for the continuous monitoring of stress/strain conditions, wherein the sensor comprises (**Figure 2; Column 3, lines 5-12**):

- A first inductor **16** (**Figure 2; Column 2, lines 63-65**);
- At least one other element **12**, which is made of piezoelectric or magnetostrictive material, and which comprises at least one pressure-dependent first impedance or a second impedance and a second inductor (**Figure 2; Column 1, lines 52-65; Column 2, line 63; Column 3, lines 13-23**);
- Wherein the second impedance and/or the second inductor are pressure-dependent **28**, so that when the amount of pressure being applied to the at least one other element is changed, the resonant frequency of an electromagnetic resonating circuit that is formed by impedance and inductor changes (**Column 3, lines 8-22**).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 2-4 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Buchwald (U.S. Patent 4,975,643)** in view of **Brandsma et al. (U.S. Patent 5,898,298)**.

According to **claim 4**, Buchwald discloses that the at least one other element comprises at least the pressure-dependent second impedance and the second inductor wherein the pressure-dependent second impedance and the second inductor form the electromagnetic resonating circuit so that when the amount of pressure being applied to the at least one other element changes, the resonant frequency of the circuit shifts (**Figure 2; Column 3, lines 3-21**).

The invention by Buchwald discloses all of the claimed inventions from above but fails to disclose the fact that the second impedance and the second inductor are connected in parallel.

10. However, it is commonly known in the art that a resonator circuit, more specifically, as disclosed by Applicant, a magnetostrictive element itself, possesses a mechanical resonance and an inherent capacitance, thus Buchwald simply fails to disclose that the resonator is a parallel resonator. However, it would have been obvious to one skilled in the art at the time of the invention to model the inherent properties of

the magnetostrictive element using a parallel construction. The alternative to a parallel resonator is a series resonator, which is commonly known in the art and is most commonly used to model the properties of a crystal resonator. Therefore, the motivation to combine is to form an alternate and more efficient embodiment of the invention disclosed by Buchwald.

The invention by Buchwald discloses all of the claimed inventions from above but fails to disclose the fact the at least one other element comprises the first impedance and first inductor which form the resonating circuit, that the element is entirely or partially made of a dielectric and that the first inductor serves as both a coupling and decoupling element.

11. However, Brandsma teaches:

According to **claim 2**, that the at least one other element comprises at least the pressure-dependent impedance **C** and that the first inductor **L1** and the first impedance **C** form the electromagnetic resonating circuit (**Figure 2; Column 3, lines 47-61, lines 65-67; Column 4, lines 1-21**).

According to **claim 3**, that the at least one other element is made entirely or partially of a dielectric material (**Column 3, lines 51-61**).

According to **claim 8**, that the first inductor **L1** serves as both coupling and decoupling element (**Figure 2; Column 4, lines 1-21**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a first inductor and a first impedance as a

resonating circuit, to use a dielectric material as part of the at least one other element and to have a first inductor as both a coupling and decoupling element as taught by Brandsma in the invention by Buchwald. The motivation for using an inductor and impedance as a resonating circuit is based on the fact the resonating circuits are commonly known in the art. The motivation for using a dielectric material as part of the at least one other element is found in the teaching of Brandsma in that Brandsma teaches that the dielectric constant between the plates of the capacitor is changed when a stress or pressure is exerted upon the capacitor, thus enabling a frequency change to occur. Using a single inductor as both decoupling and coupling eliminates the number of parts needed and thus would provide a more economical embodiment of the invention by Buchwald.

12. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Buchwald (U.S. Patent 4,975,643)** in view of **Brandsma et al. (U.S. Patent 5,898,298)** and further in view of **Ort (U.S. Patent 5,192,938)**.

The invention by Buchwald, as modified by Brandsma, discloses all of the claimed invention from above but fails to disclose that the sensor is a foil-type sensor the encompasses the at least one other element near the contact surfaces.

13. However, Ort teaches:

According to **claim 5**, the sensor is essentially foil **2**, on which the first inductor and contact surfaces **4a,4b** for contacting the element are arranged (**Figure 1; Column 5, line 64; Column 6, lines 6-9**).

According to **claim 6**, the foil-type sensor **2** encompasses the at least one other element at least partially in the area of the contact surfaces **4a,4b (Figure 1)**.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a foil-type sensor that encompasses the at least one other element near the contact surfaces as taught by Ort in the invention by Buchwald, as modified by Brandsma. The motivation for doing so is found in the teachings of Ort in the that Ort teaches the use of a foil-type sensor to reduce the cost of manufacturing, to increase measurement characteristics and to provide a robust strain sensor (**Ort, Column 3, lines 18-31**).

14. **Claims 7 and 9-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Buchwald (U.S. Patent 4,975,643)** in view of **Ort (U.S. Patent 5,192,938)** and further in view of **Kraus et al. (U.S. Patent 3,945,704)**.

According to **claim 11**, Buchwald discloses that a second element **38** is arranged to allow comparative measurement to compensate for the effects of temperature and aging (**Figure 2; Column 2, lines 12-14; Column 3, lines 31-35**).

The invention by Buchwald, as further modified by Ort, discloses all of the claimed limitations from above but fails to disclose that the sensor projects over the element, a test device is coupled to the sensor via the first inductor, the element is integrated into a flat washer and that the washer is provided between a mounting assembly and a structure that is connected to the mounting assembly.

15. However, Kraus teaches:

According to **claim 7**, the section of the foil-type sensor that is equipped with the first inductor projects out over the element (**Figure 1**).

According to **claim 9**, a testing device for checking stress/strain conditions is coupled, contact-free, to the sensor **20** via the first inductor (**Figure 2; Column 2, lines 35-52**).

According to **claim 10**, the at least one other element is integrated into a flat washer **20** (**Figure 1; Column 2, lines 15-17**).

According to **claim 12**, the flat washer **20** is positioned between a mounting assembly **24** and a structure **23** that is connected to said mounting assembly (**Figure 1; Column 2, lines 5-17**).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a sensor that projects over the element, a test device coupled to the sensor via the first inductor, an element that is integrated into a flat washer and that the washer is provided between a mounting assembly and a structure that is connected to the mounting assembly as taught by Kraus in the invention by Buchwald, as further modified by Ort. The motivation for doing so is found in the teachings of Kraus in that Kraus teaches that the sensor project out over the element in order to be connected to the testing device, that the test device is coupled to the sensor via a shielded connection to reduce disturbance signals, the element is a flat washer to

measure the stress/strain of a torque applied to a bolt which holds together two elements.

16. **Claim 13 and 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Buchwald (U.S. Patent 4,975,643)** in view of **Kraus et al. (U.S. Patent 3,945,704)**.

According to **claim 13**, Buchwald discloses at least one other element **12**, which is made of piezoelectric or magnetostrictive material, of a sensor with a first inductor **16**, or a second impedance and a second inductor, wherein the second impedance and/or the second inductor are pressure-dependent, such that when the amount of pressure being applied to the at least one other element is changed, the resonant frequency of an electromagnetic resonating circuit that is formed by impedance and inductor changes (**Figure 2; Column 1, lines 52-65; Column 2, lines 63-65; Column 3, lines 8-23**).

According to **claim 17**, Buchwald discloses that a comparative measurement is conducted using a second element **38**, so that the shifts in the resonant frequency can be identified (**Figure 2; Column 2, lines 12-14; Column 3, lines 31-35**).

The invention by Buchwald discloses all of the claimed invention above but fails to disclose a method of arranging between a mounting assembly and a structure connected to the mounting assembly the at least one other element, that the resonating circuit projects out over the first inductor and wherein the measurement of the resonating frequency is accomplished via a contact-free coupling to the first inductor.

17. However, Kraus teaches:

According to **claim 13**, the flat washer **20** is positioned between a mounting assembly **24** and a structure **23** that is connected to said mounting assembly (**Figure 1; Column 2, lines 5-17**).

According to **claim 15**, the resonating circuit projects out over the first inductor (**Figure 1**). In view of the 112 rejection stated above, the Examiner maintains the position that since the first inductor has been referenced by the Applicant as the portion of the sensor that projects over the at least one other element it would be contradictory to assume that the inductor is no longer projecting over the at least one other element. Therefore, Kraus adequately teaches a portion of a sensor that projects over at least one other element which in combination with Buchwald, would contain an inductor.

According to **claim 16**, the measurement of the resonant frequency of the electromagnetic resonating circuit is accomplished via a contact-free coupling to the first inductor **20** (**Figure 2; Column 2, lines 35-52**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a method of arranging between a mounting assembly and a structure connected to the mounting assembly the at least one other element, a resonating circuit that projects out over the first inductor and wherein the measurement of the resonating frequency is accomplished via a contact-free coupling to the first inductor as taught by Kraus in the invention by Buchwald. The motivation for doing so is found in the teachings of Kraus in that Kraus teaches that the sensor project out over the element in order to be connected to the testing device, that the test device

is coupled to the sensor via a shielded connection to reduce disturbance signals, the element is a flat washer to measure the stress/strain of a torque applied to a bolt which holds together two elements.

18. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Buchwald (U.S. Patent 4,975,643)** in view of **Kraus et al. (U.S. Patent 3,945,704)** and further in view of **Brandsma et al. (U.S. Patent 5,898,298)**.

The invention by Buchwald, as modified by Kraus, discloses all of the claimed inventions from above but fails to disclose that the element is compressed when pressure is applied and released when pressure is released.

19. However, Brandsma teaches that the element is compressed when pressure is applied and released when pressure is released (**Column 3, lines 55-61**).


Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow an element to be compressed and uncompressed based on the amount of pressure being applied as taught by Brandsma in the invention by Buchwald, as modified by Kraus. The motivation for doing so is found in the teachings of Brandsma in the Brandsma teaches that the plates of the capacitor are varied in distance, as determined by the amount of pressure applied, in order to vary the resonant frequency of a resonator circuit.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stover, Kutsay, Kraus et al., Shinjo, Takeuchi, Takeuchi, and Kramer. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Dunlap whose telephone number is (571) 270-1335. The examiner can normally be reached on M-F 8-5 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrell McKinnon can be reached on (571) 272-4797. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


TERRELL L. MCKINNON
SUPERVISORY PATENT EXAMINER

Jonathan Dunlap
Examiner
Art Unit 2809
February 5, 2007

